Research in physical therapy in severe mental illness:
from efficacy to effectiveness of physical activity interventions

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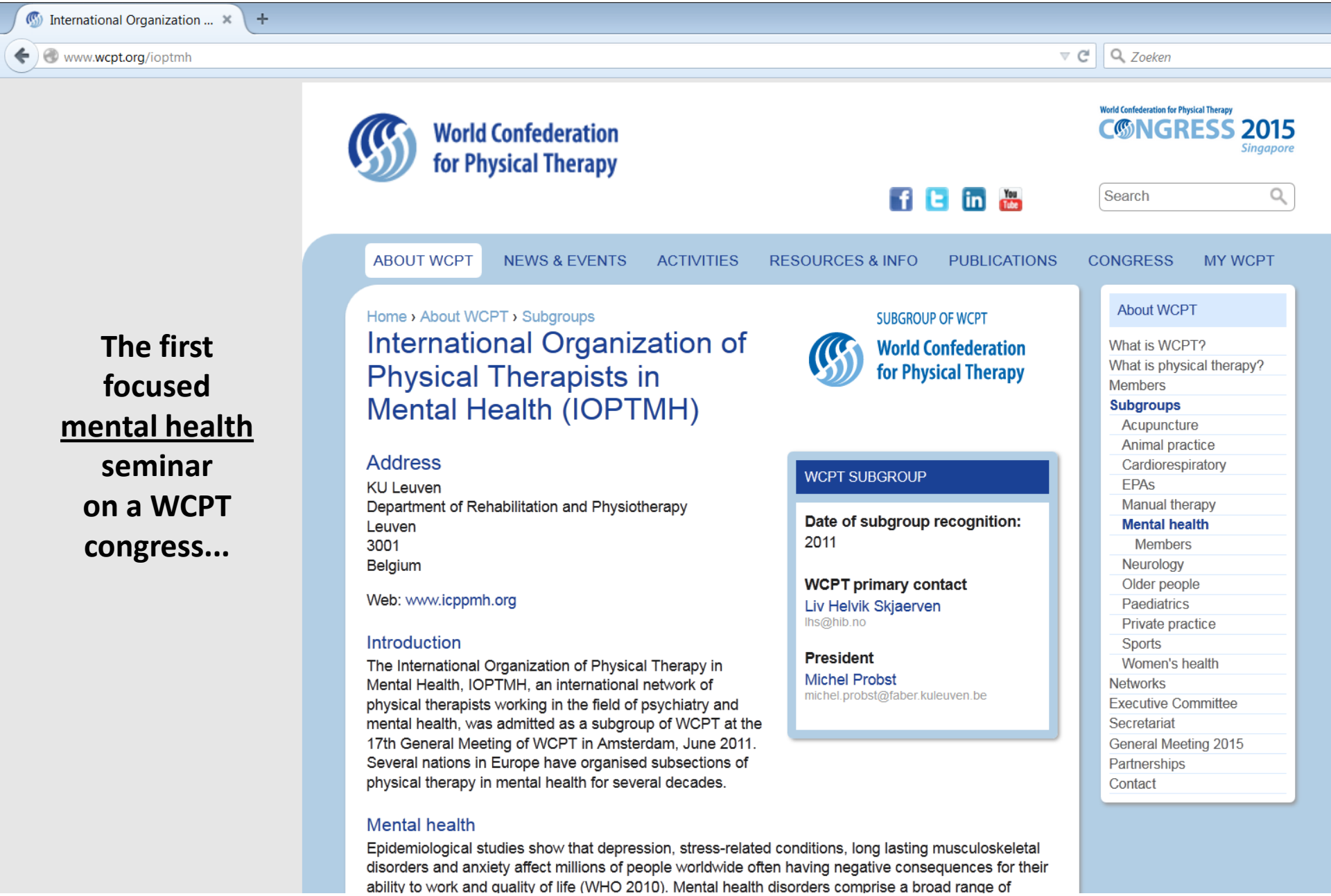
Disclosures

- KU Leuven Department of Rehabilitation Sciences, post-doctoral research fellow funded by the Research Foundation Flanders (FWO-Vlaanderen).
- No commercial or other financial interests to disclose.

The first focused <u>mental health</u> seminar on a WCPT congress...



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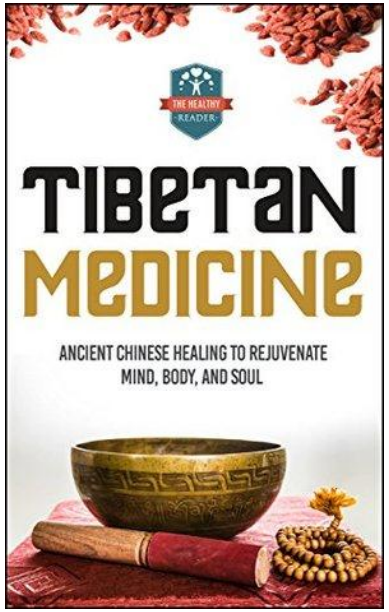

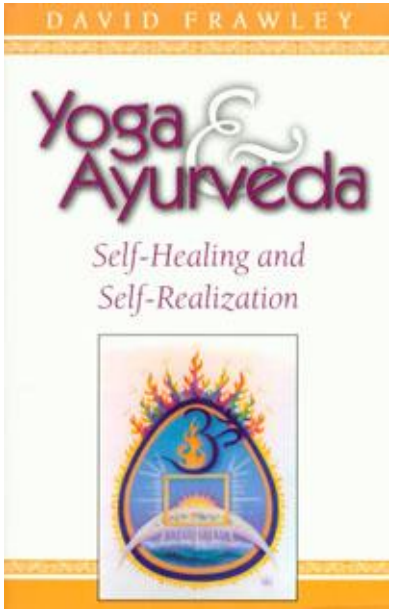

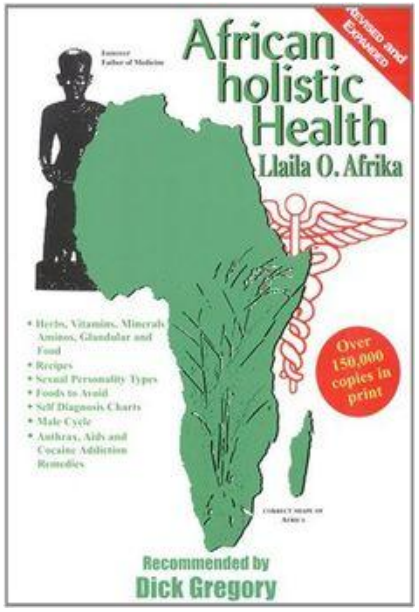

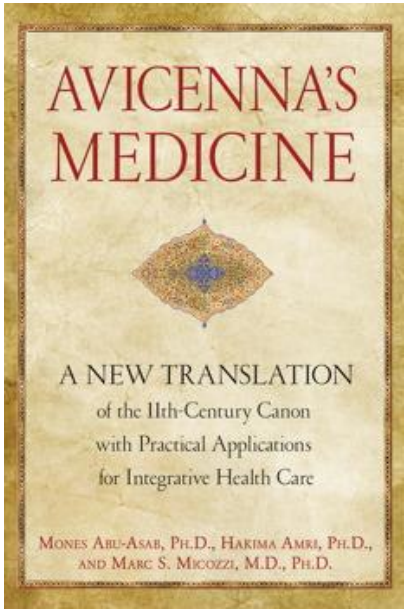

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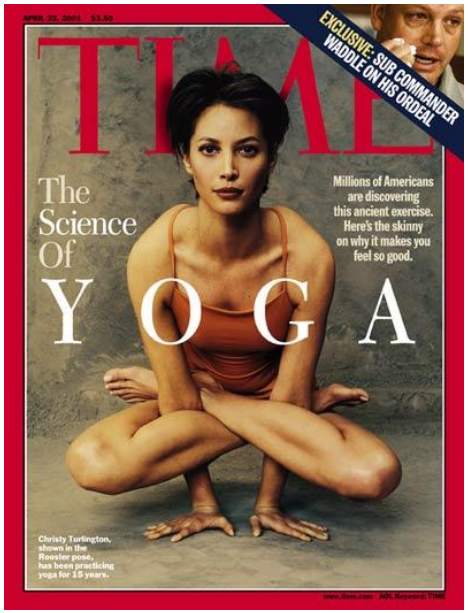
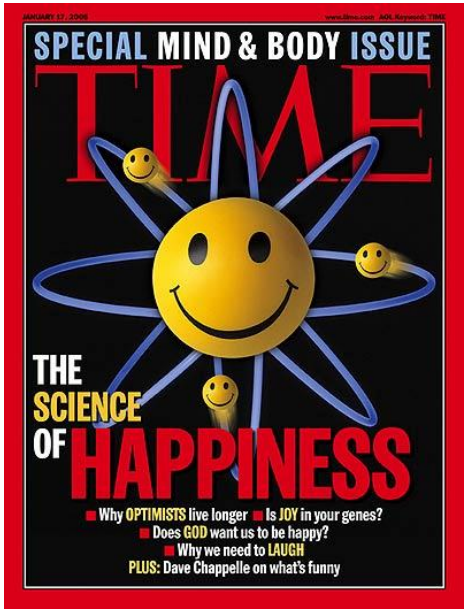
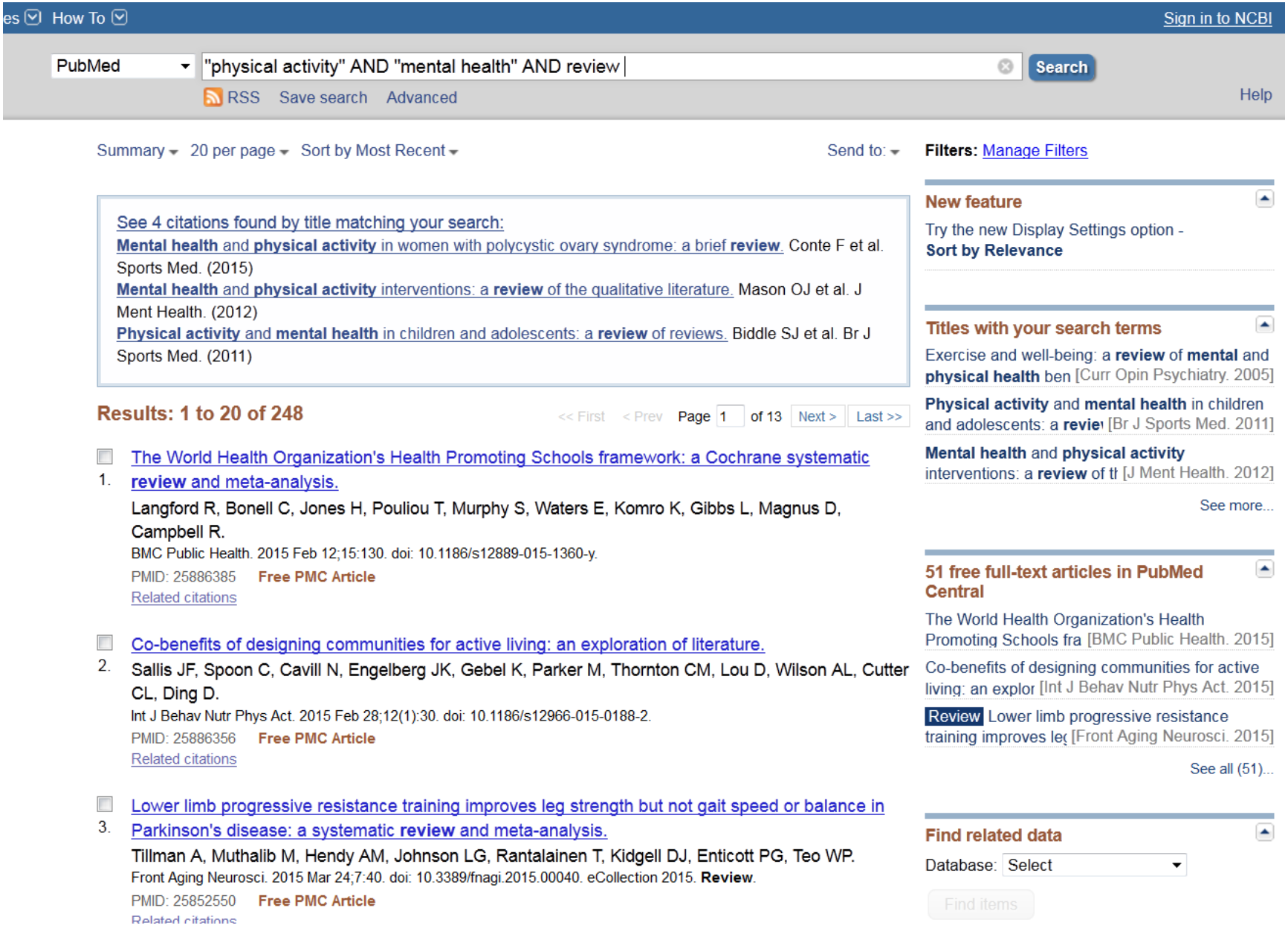




… even in the scientific world…



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META-ANALYSIS OF ACUTE EXERCISE EFFECTS ON STATE ANXIETY: AN UPDATE OF RANDOMIZED CONTROLLED TRIALS OVER THE PAST 25 YEARS.

Ensari I[1], Greenlee TA, Motl RW, Petruzzello SJ.

Author information

Abstract

BACKGROUND: One prominent and well-cited meta-analysis published nearly 25 years ago reported that an acute or single bout of exercise reduced state anxiety by approximately ¼ standard deviation. We conducted a meta-analysis of randomized controlled trials (RCTs) published after that meta-analysis for updating our understanding of the acute effects of exercise on state anxiety.

METHODS: We searched PubMed, EBSCOHost, Medline, PsycINFO, ERIC, and ScienceDirect for RCTs of acute exercise and state anxiety as an outcome. There were 36 RCTs that met inclusion criteria and yielded data for effect size (ES) generation (Cohen's d). An overall ES was calculated using a random effects model and expressed as Hedge's g.

RESULTS: The weighted mean ES was small (Hedge's g = 0.16, standard error (SE) = 0.06), but statistically significant (P < 0.05), and indicated that a single bout of exercise resulted in an improvement in state anxiety compared with control. The overall ES was heterogeneous and post hoc, exploratory analyses using both random- and fixed-effects models identified several variables as moderators including sample age, sex and health status, baseline activity levels, exercise intensity, modality and control condition, randomization, overall study quality, and the anxiety measure (P < 0.05).

CONCLUSION: The cumulative evidence from high quality studies indicates that acute bouts of exercise can yield a small reduction in state anxiety. The research is still plagued by floor effects associated with recruiting persons with normal or lower levels of state anxiety, and this should be overcome in subsequent trials.

KEYWORDS: acute; anxiety; exercise; mood; review

PMID: 25899389 [PubMed - as supplied by publisher]

META-ANALYSIS

Physical Activity Interventions for People With Mental Illness: A Systematic Review and Meta-Analysis

Simon Rosenbaum, BSc; Anne Tiedemann, BSc, PhD; Catherine Sherrington, BAppSc(Physio), MPH, PhD; Jackie Curtis, MBBS; and Philip B. Ward, BMedSci, PhD

J Clin Psychiatry

Results: Thirty-nine eligible trials were identified. The primary meta-analysis found a large effect of physical activity on depressive symptoms (n = 20; standardized mean difference (SMD) = 0.80). The effect size in trial interventions that met ACSM guidelines for aerobic exercise did not differ significantly from those that did not meet these guidelines. The effect for trials with higher methodological quality was smaller than that observed for trials with lower methodological quality (SMD = 0.39 vs 1.35); however, the difference was not statistically significant. A large effect was found for schizophrenia symptoms (SMD = 1.0), a small effect was found for anthropometry (SMD = 0.24), and moderate effects were found for aerobic capacity (SMD = 0.63) and quality of life (SMD = 0.64).

Conclusions: Physical activity reduced depressive symptoms in people with mental illness. Larger effects were seen in studies of poorer methodological quality. Physical activity reduced symptoms of schizophrenia and improved anthropometric measures, aerobic capacity, and quality of life among people with mental illness.

4 Isbell H, Chrusciel TL. Dependence liability of "non-narcotic" drugs. *Bull World Health Organ* 1970; **43:** 5–111.

5 Global Commission on Drug Policy. *Report of the Global Commission on Drug Policy* 2011. http://www.globalcommissionondrugs.org/wp-content/themes/gcdp_v1/pdf/Global_Commission_Report_English.pdf (accessed Feb 1, 2015).

Why moving more should be promoted for severe mental illness

In their August 2014 Editorial, *The Lancet Psychiatry*[1] called for investigation into the best way to deliver exercise interventions in the multidisciplinary management of people with severe mental illness. We concur that the most important challenge to the effectiveness of exercise is adherence. We therefore advocate that the focus in this debate should not be on the most ideal dose–response (ie, efficacy), but on how people with severe mental illness might include such changes in their daily lives (ie, effectiveness).

Exercise is not a one-size-fits-all intervention.[2] Symptoms, previous exercise history, motivation, and access to services all effect the modality and intensity of exercise that individuals will undertake.[3] Inexperience with intense physical effort, associated fatigue and discomfort, increased risk of physical injuries, poor availability of exercise facilities and specialised equipment, and cost associated with access to facilities or training can all act as barriers for moderate to vigorous exercise.[3] For others, this type of activity might be ideal, supporting the need for access to trained clinicians with expertise in exercise prescription and psychopathology.

We advocate that individuals who are unable or unwilling to meet the goal of 150 min of moderate physical activity could still benefit from engaging in some physical activity. Findings of a 2013 meta-analysis[4] of studies of the general population suggested that risk for premature mortality significantly increases when adults sit for more than 7 h a day, indicating that recommendations should be as broad as possible. Therefore, people with severe mental illness should be advised to sit less and to break up sitting time throughout the day rather than focusing on compliance with general population guidelines. Health-care professionals should take immediate action and advise patients to sit less and move more. For example, people with severe mental illness might be advised to reduce prolonged sitting by standing or strolling for 1–2 min at least once an hour. Advice on how to accumulate time spent in light physical activity could include getting up from the chair and moving around during television commercial breaks, or adding 5 min walks throughout the day, for example walking short distances rather than using motorised transport.

Although seemingly trivial, adopting small, incremental lifestyle changes can better position sedentary people with severe mental illness to transition to brief bouts of moderate intensity exercise.[5] Such an approach will not be constrained by socioeconomic, environmental, and organisational barriers. Implementation of such interventions requires a shift in culture and system reform, from the design of mental health facilities through to changing staff attitudes. At a minimum, mental health professionals should briefly assess current exercise behaviours at every consultation, and discuss realistic and specific goals that could be adopted, with support and follow-up. Changes in physical and mental health parameters can then be monitored.

Health recommendations for the general population should not be discarded, but reframed as aspirational goals. Small incremental improvements—sitting less and moving more—constitute real-world interventions to improve the health of people with severe mental illness.

We declare no competing interests.

*Davy Vancampfort, Brendon Stubbs, Philip B Ward, Scott Teasdale, Simon Rosenbaum

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University Psychiatric Centre, Department of Neurosciences (DV) and Department of Rehabilitation Sciences (DV), Katholieke Universiteit Leuven, Kortenberg 3070, Belgium (DV); School of Health and Social Care, University of Greenwich, Eltham, London, UK (BS), and School of Psychiatry, University of New South Wales, Sydney, NSW, Australia (PBW, ST, SR)

1 The Lancet Psychiatry. Physical and mental health: activate and integrate. *Lancet Psychiatry* 2014; **1:** 163.

2 de Souto Barreto P. Global health agenda on non-communicable diseases: has WHO set a smart goal for physical activity? *BMJ* 2015; **350:** h23.

3 Vancampfort D, Knapen J, Probst M, Scheewe T, Remans S, De Hert M. A systematic review of correlates of physical activity in patients with schizophrenia. *Acta Psychiatrica Scandinavica* 2012; **125:** 352–62.

4 Chau JY, Grunseit AC, Chey T, et al. Daily sitting time and all-cause mortality: a meta-analysis. *PLoS One* 2013; **8:** e80000.

5 Vancampfort D, De Hert M, Vansteenkiste M, et al. The importance of self-determined motivation towards physical activity in patients with schizophrenia. *Psychiatry Research* 2013; **210:** 812–18.

Physical activity and sedentary behaviour in outpatients with schizophrenia: A systematic review and meta-analysis

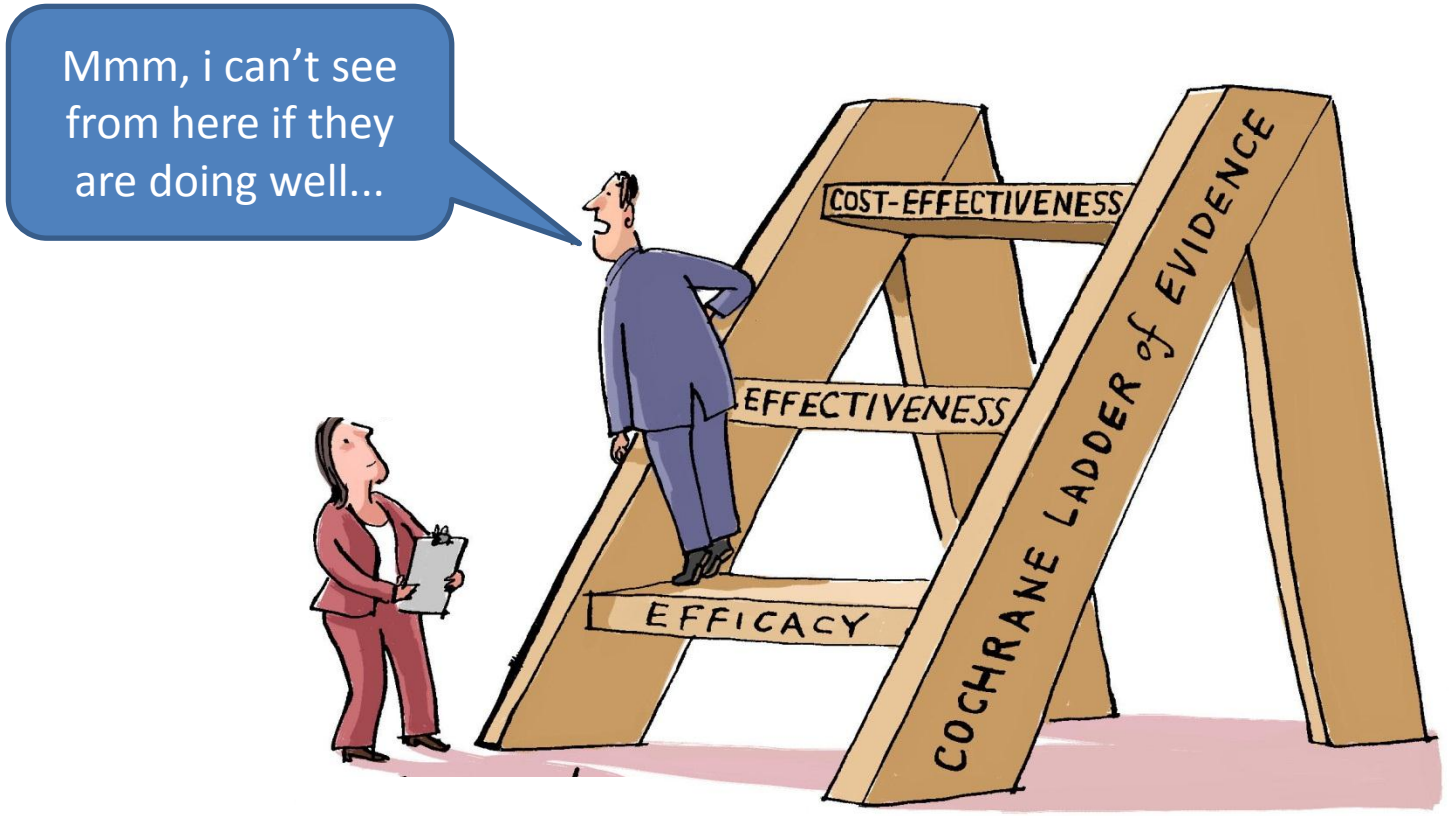
Andrew Soundy, Martien Wampers, Michel Probst, Marc De Hert, Brendon Stubbs, Davy Vancampfort

Aims: *To identify, appraise and synthesise evidence on the level of physical inactivity or activity and its moderators in outpatients with schizophrenia.*
Method: *A systematic search strategy was undertaken and included eight electronic databases. Searches were undertaken using a subject and text-word search strategy between the dates from each databases' inception to September 2012. Two independent reviewers determined study eligibility. Data extraction detailed the level and time spent in physical activity.*
Results: *One hundred and sixty three records were screened, and 12 studies (n=628) met the inclusion criteria. A meta-analysis identified higher levels of sedentary activity (N=2; n=140; z=44.1; P<0.001) and low categories of physical activity (N=2; n=140; z=147,306; P<0.001), and lower levels of moderate (N=3; n=300; z=-5.1; P<0.001) and vigorous (n=3; n=220; z=-3.2; P=0.001) physical activity categories when comparing patients with schizophrenia to healthy age- and gender-matched controls. Meta-regression found no significant association between moderate and vigorous physical activity with age (P=0.08; P=0.14 respectively) and gender (P=0.08; P=0.14 respectively) as the moderators.*
Conclusion: *The current study is the first to provide meta-analytic evidence for the sedentary behaviour and lack of physical activity in outpatients with schizophrenia.*

International Journal of Therapy and Rehabilitation, December 2013, Vol 20, No 12

While in the general population almost 50% does not comply with the physical activity guidelines in patients with schizophrenia more than 75% is not physically active enough.

Not the efficacy (dose-response), but the effectiveness of physical activity (how people with severe mental illness might include lifestyle changes in their daily lives) should be the next step in future research …



Why ?

"Refusing to go to the gym is not the same thing as resistance training."

How motivating people with severe mental illness for lifestyle changes in their daily lives?

15	●	$1 Million
14	●	$500,000
13	●	$250,000
12	●	$125,000
11	●	$64,000
10	●	$32,000
9	●	$16,000
8	●	$8,000
7	●	$4,000
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1	●	$100


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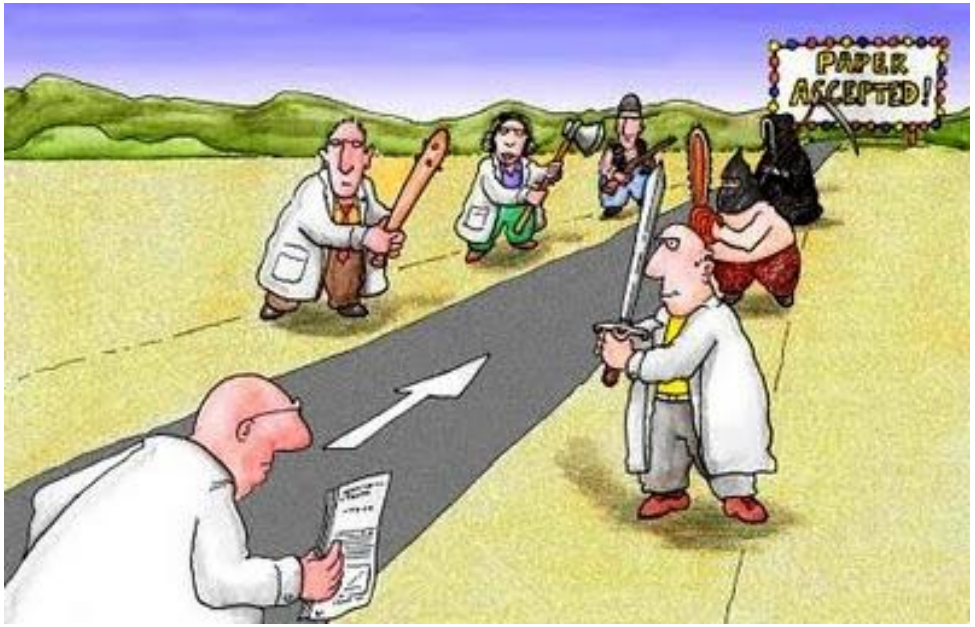
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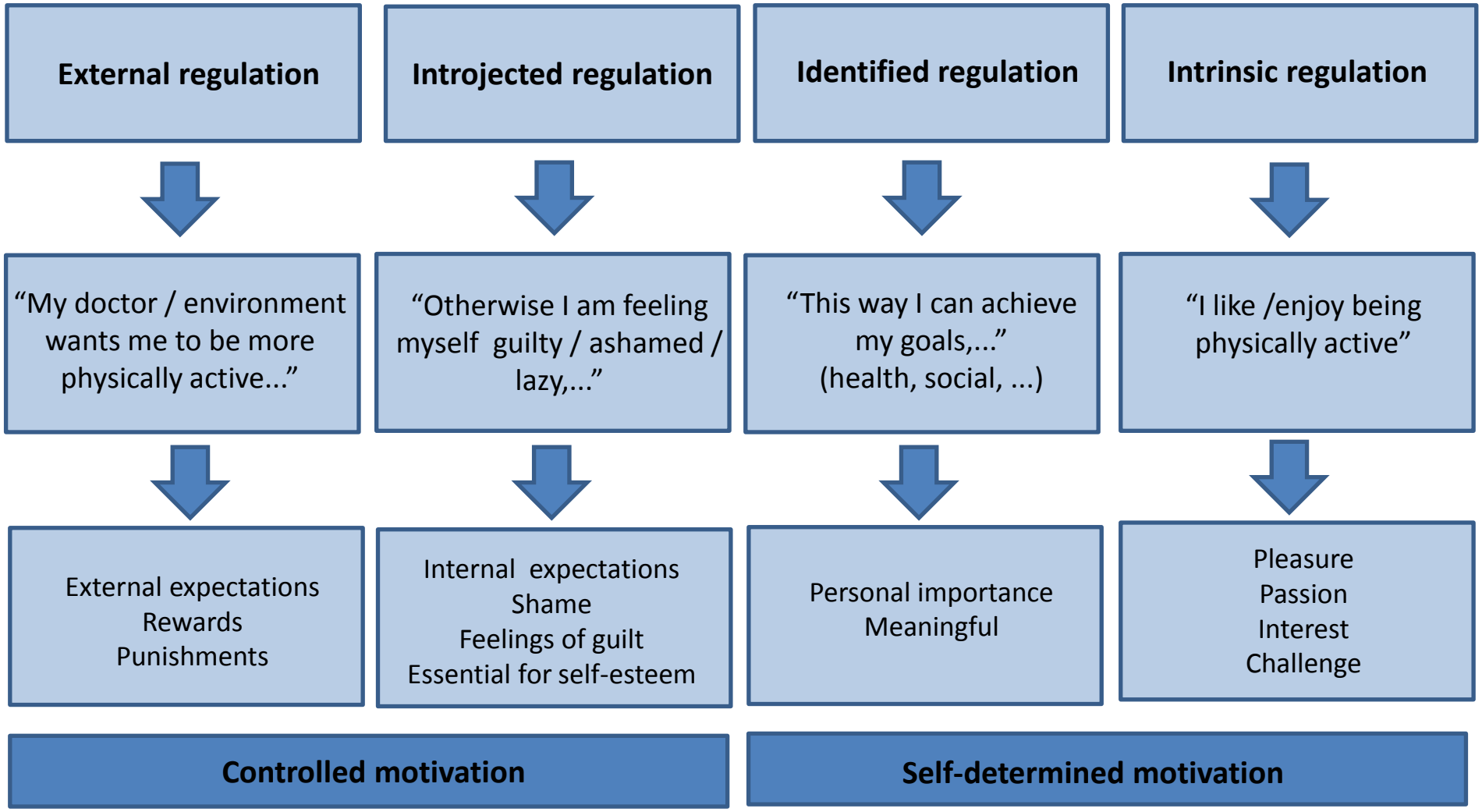
Introduction
Aims

<u>Our study (in preparation) had two major aims.</u>

1. We investigated **if physical activity levels** of people with SMI **are related to the different motivational types** as formulated by the the self determination theory.
2. A secondary aim was to examine **differences** in types of motivation across distinct groups: schizophrenia versus major depression versus bipolar disorder, male versus female patients, low versus high educated patients, in inpatients versus outpatients.

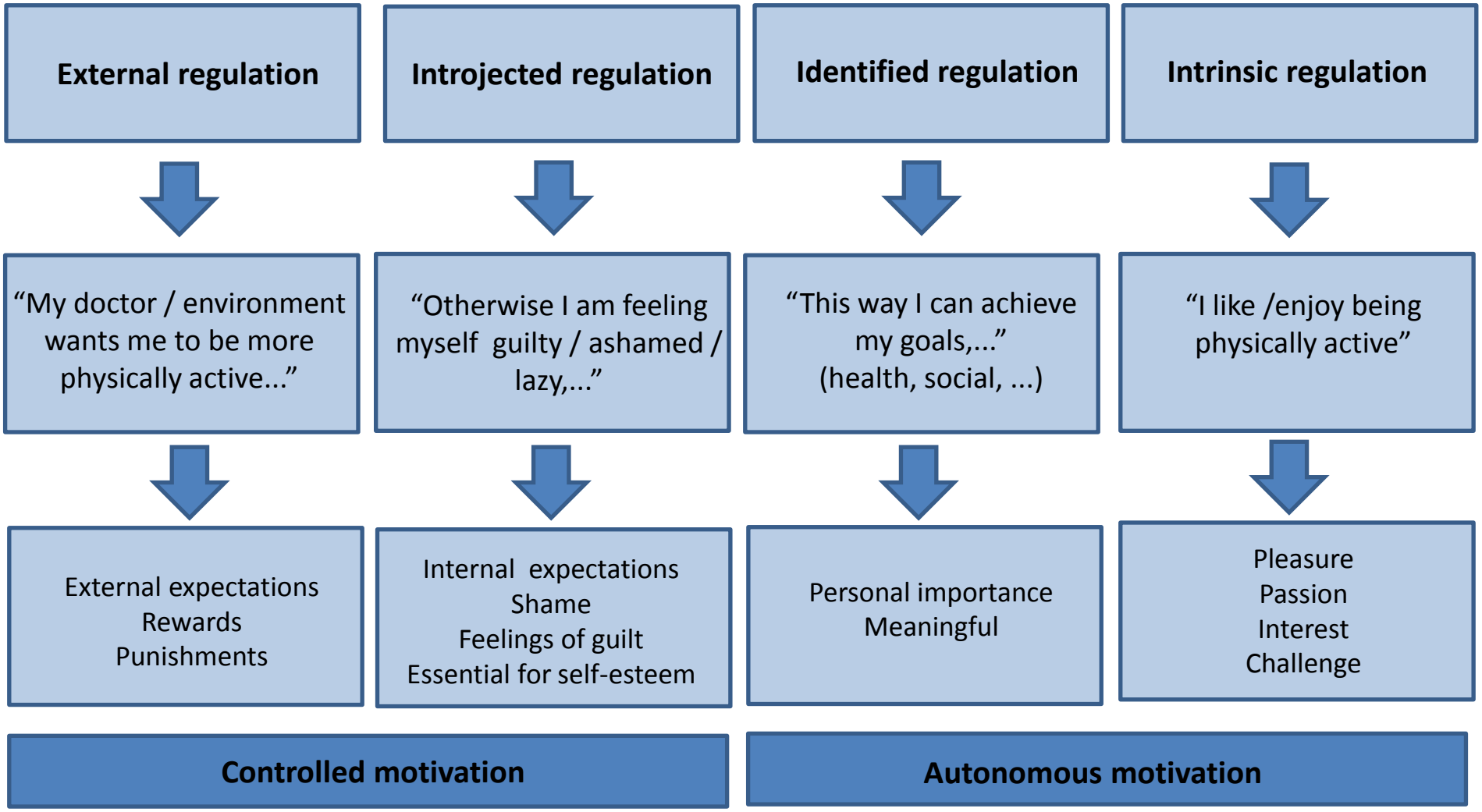
The self-determination theory

Why are we physically active?



The self-determination theory

Why are we physically active?

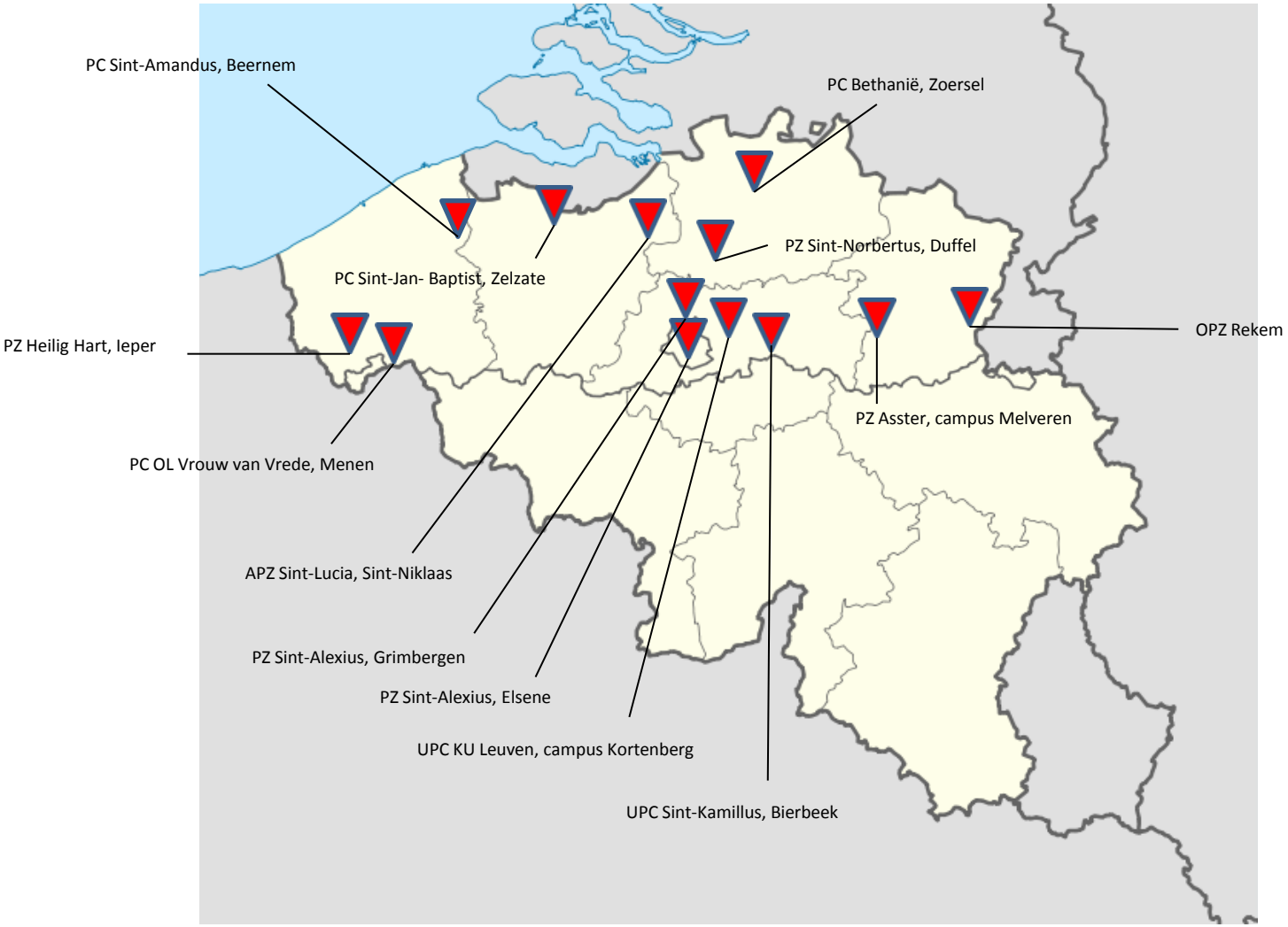


Methods

Inclusion criteria

- **In- and outpatients with a DSM-IV** diagnosis of schizophrenia / major depression disorder / bipolar disorder (American Psychiatric Association, 2000): the diagnosis was established by experienced psychiatrists responsible for the patients' treatment.
- **Psychiatrically stable on current psychotropic regimen** for at least **4 weeks**.
- Only patients with a **clinical global impression severity scale** (Guy, 1976) **score of 3 or less** assessed by a trained psychiatrist during a semi-structured interview: be able to concentrate for +- 20 min.

Methods
Participating centers



Methods
Materials

- **<u>International Physical Activity Questionnaire:</u>**

International Physical Activity Questionnaire : Craig, C.L., Marshall, A.L., Sjöström, M., Bauman, A.E., Booth, M.L., Ainsworth, B.E., et al., 2003. International physical activity questionnaire: 12-country reliability and validity. Medicine and Science in Sports and Exercise 35, 1381-1395.

- The IPAQ considers **a 7-day recall** period.
- Data from the IPAQ is summarized according to **minutes of walking, moderate physical activity** (e.g., activities that make one breath somewhat harder than normal such as carrying light loads, bicycling at a regular pace, or easy swimming), and **vigorous physical activity** (e.g., activities that make you breath much harder than normal such as heavy lifting, digging, aerobics, or fast bicycling) per week.
- Previous research (Faulkner et al., 2006) has identified that the IPAQ is a surveillance tool that can be used, although with limitations, to assess levels of physical activity in people with severe mental illness.

Methods
Materials

- **<u>Behavioral Regulation in Exercise Questionnaire-2 :</u>**
  - We **adapted** the BREQ-2 by replacing the term “exercise” with the term “physical activity”: physical activity recommendations refer to all physical activities and not to exercise in particular which is only one part of physical activity.

Results

Participants (n=294)

Variables	Mean±SD or number (%)
Age (years)	43.6±13.6
BMI	26.2±4.9
Schizophrenia	129 (43,9%)
Bipolar disorder	69 (23,5%)
Major depressive disorder	96 (32,6%)
Outpatients	68 (55,7%)
Lower education	186 (63,3%)
Total walking time (min/week)	173.0±145.4
Total moderate physical activity time (min/week)	81.4±113.0
Total vigorous physical activity time (min/week)	37.2±71.0

Results

Table 1. Differences in motivation comparing inactive and active* participants

	Inactive (n=116)	**Active (n=167)**	**t-value**	***P*-value**
Amotivation	1.0±0.9	0.3±0.6	8.0	<0.001
External regulation	1.2±1.0	0.7±0.9	4.2	<0.001
Introjected regulation	1.4±1.0	1.2±1.0	1.2	0.22
Identified regulation	2.0±0.9	2.9±0.8	-8.0	<0.001
Intrinsic regulation	1.9±1.0	3.0±0.8	-9.0	<0.001

Unpaired t-test. *Active participants meet one of the following three criteria: (1) three or more days of vigorous activity of at least 20 minutes per day, or (2) five or more days of moderate-intensity activity or walking of at least 30 minutes per day, or (3) five or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-minutes/week.

Results

Table 2. Pearson correlations between physical activity, motivation scores and demographical variables (n=294)

	IPAQ walking	**IPAQ moderate**	**IPAQ vigorous**	**age**	**BMI**
Amotivation	-0.38**	-0.30**	-0.27**	0.04	-0.02
External regulation	-0.24**	-0.17*	-0.16*	0.04	0.11
Introjected regulation	-0.08	-0.15*	-0.05	0.10	-0.03
Identified regulation	0.43**	0.35*	0.32**	0.01	-0.02
Intrinsic regulation	0.49**	0.35**	0.36**	-0.07	-0.02

* $P<0.01$, **$P<0.001$; IPAQ=International Physical Activity Questionnaire, PA= physical activity.

The association with autonomous regulation was the strongest for the amount of walking, which is perhaps the stepping stone towards more intense physical activities…

Results
Differences between groups

- There were **no significant differences**:
  - between different diagnostic groups
  - between men and women
  - between in- and outpatients
  - between higher and lower educated persons

Indicating that all need the same care!

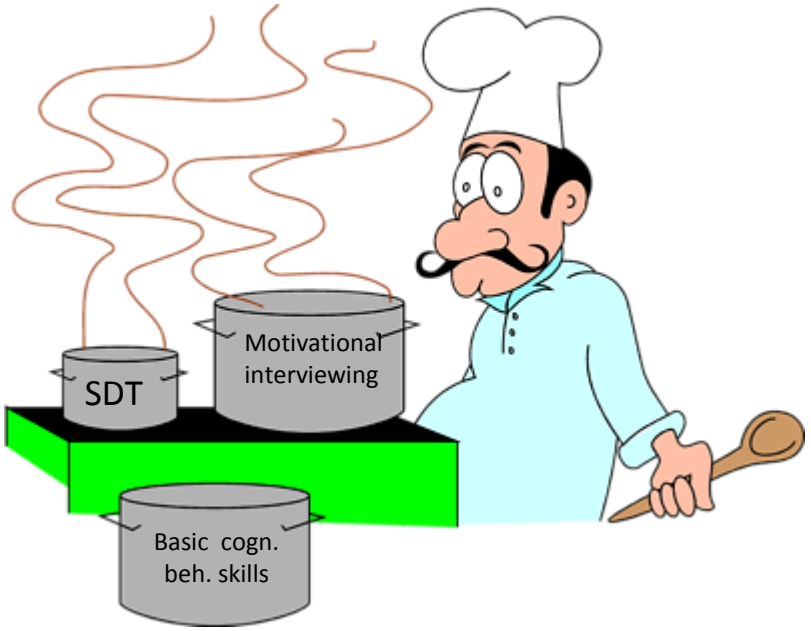
What are now the practical implications for physical therapists?

"There is nothing more practical than a good theory."

Kurt Lewin
1952

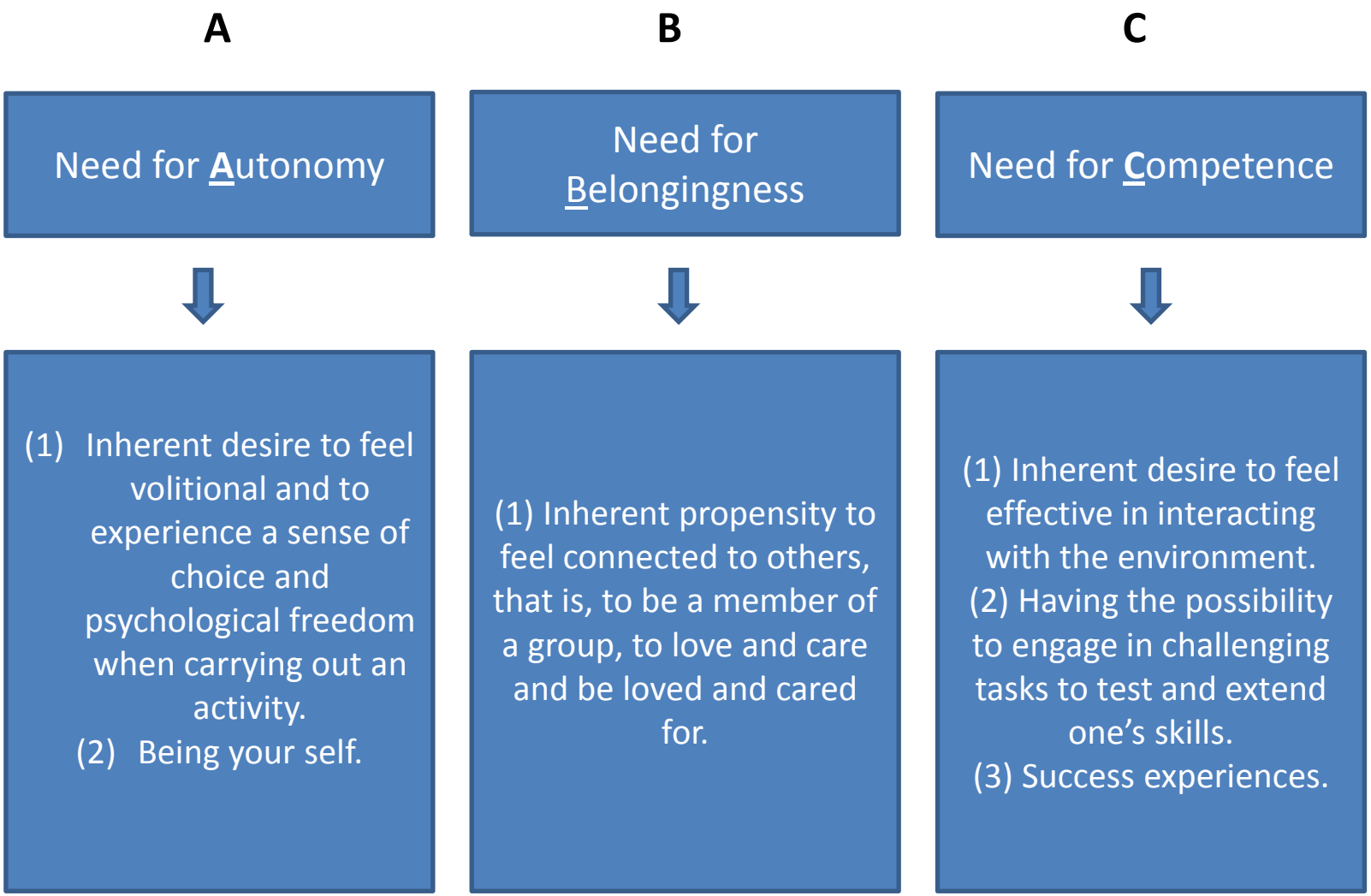
What are now the practical implications for physical therapists?

- There are no detailled recipes that do guarantee a succesfull outcome.
- The ingredients are however known now: it's up to the physical therapists to use them in an appropriate way.



Practical implications

Need-supportive coaching



Practical implications

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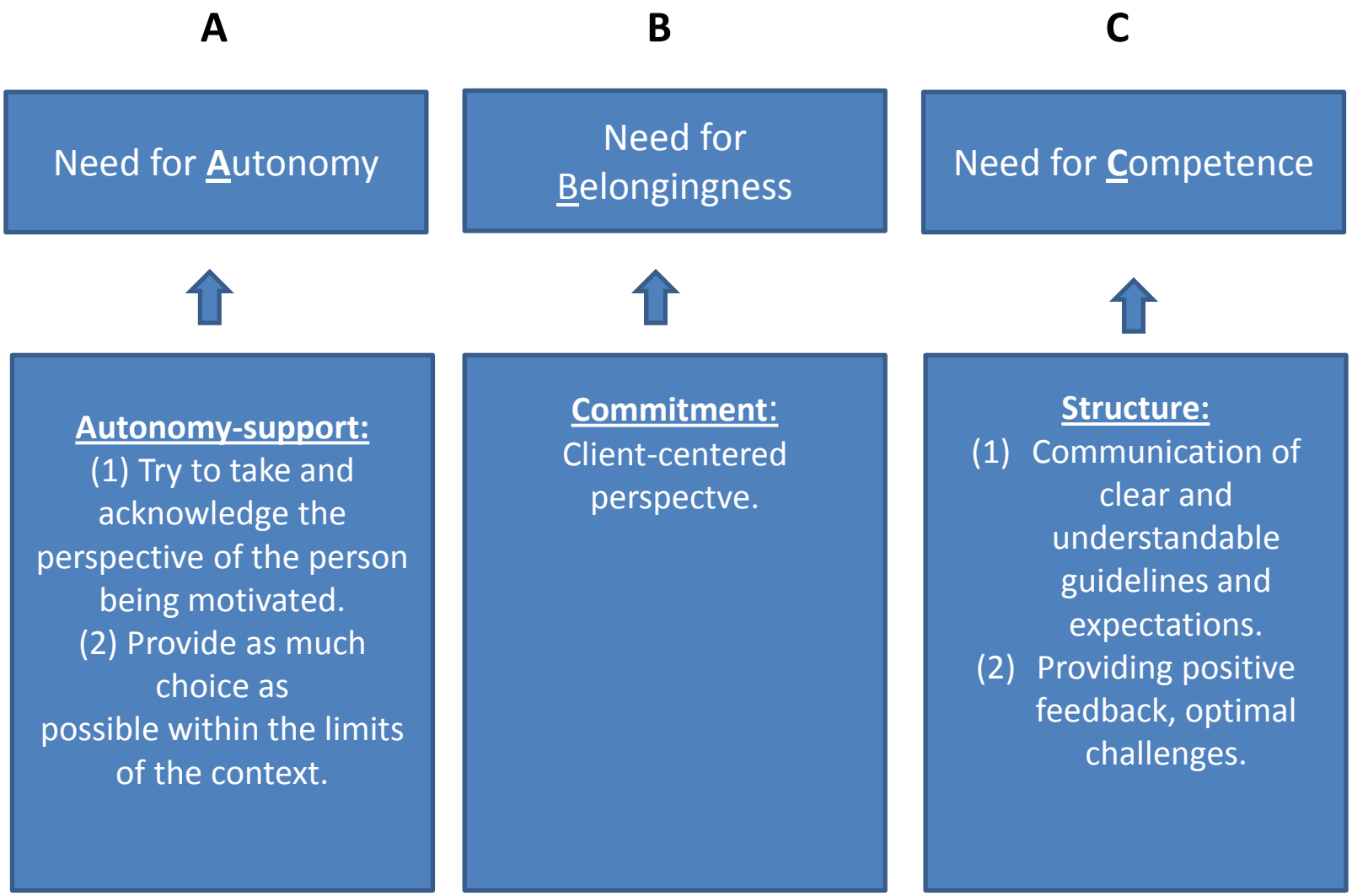
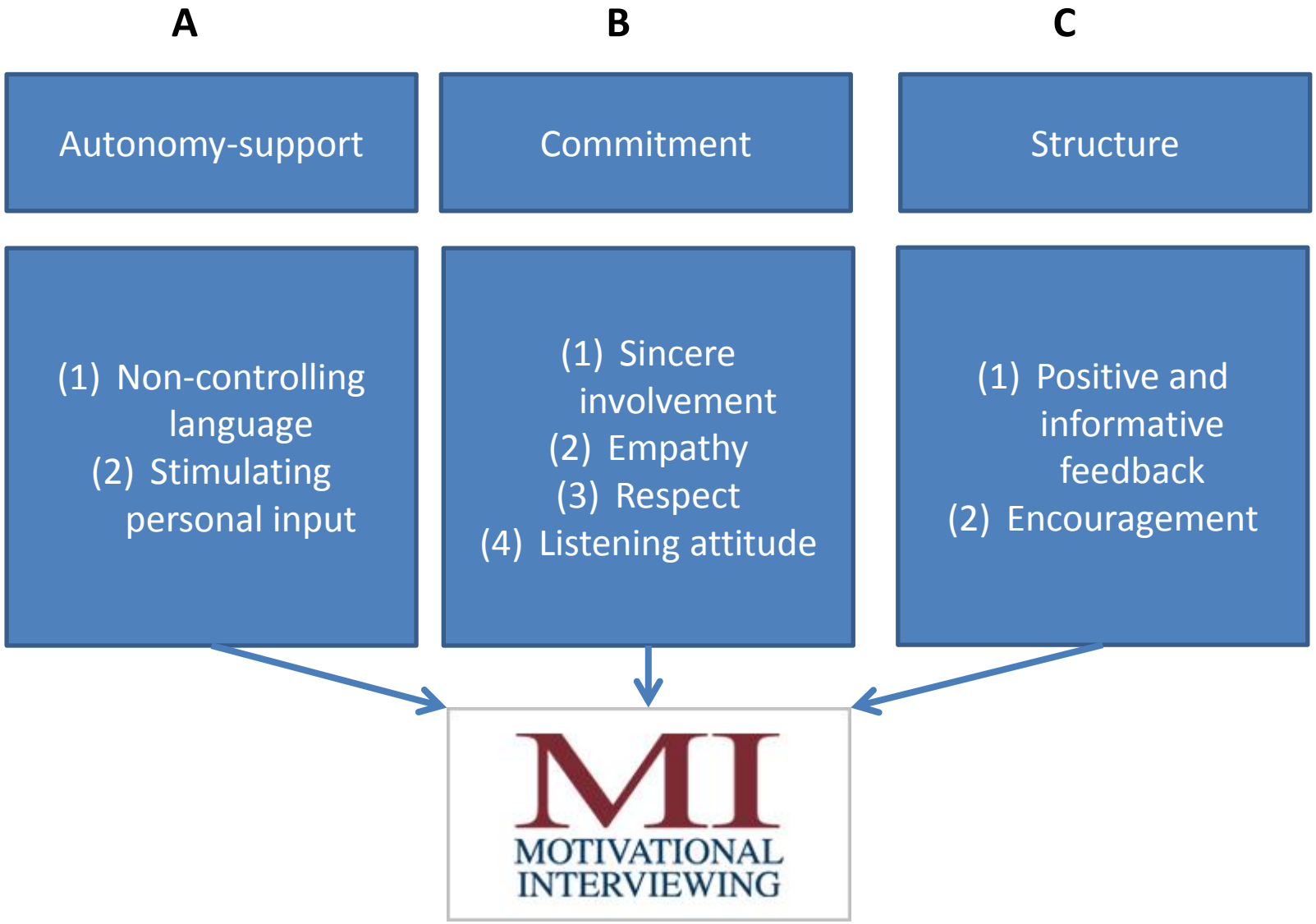


Practical implications

Need-supportive coaching



Vansteenkiste et al. International Journal of Behavioral Nutrition and Physical Activity 2012, 9:23
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METHODOLOGY Open Access

Toward systematic integration between Self-Determination Theory and Motivational Interviewing as examples of top-down and bottom-up intervention development: Autonomy or volition as a fundamental theoretical principle

Maarten Vansteenkiste[1*], Geoffrey C Williams[2] and Ken Resnicow[3]

Miller and Rollnick International Journal of Behavioral Nutrition and Physical Activity 2012, 9:25
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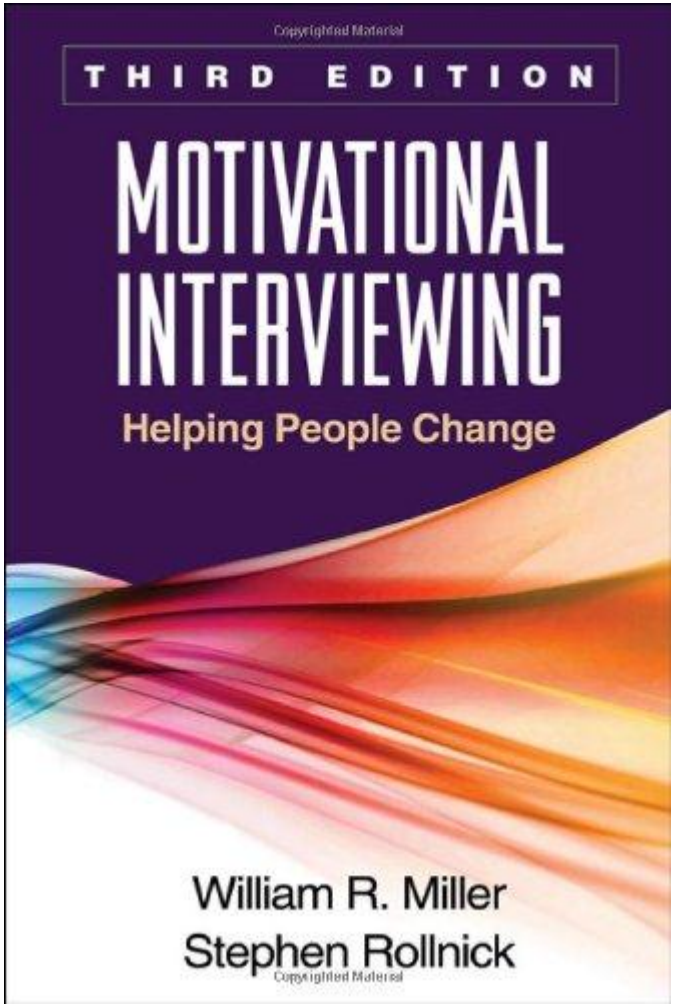
INTERNATIONAL JOURNAL OF BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY

COMMENTARY Open Access

Meeting in the middle: motivational interviewing and self-determination theory

William R Miller[1] and Stephen Rollnick[2*]

How to start...?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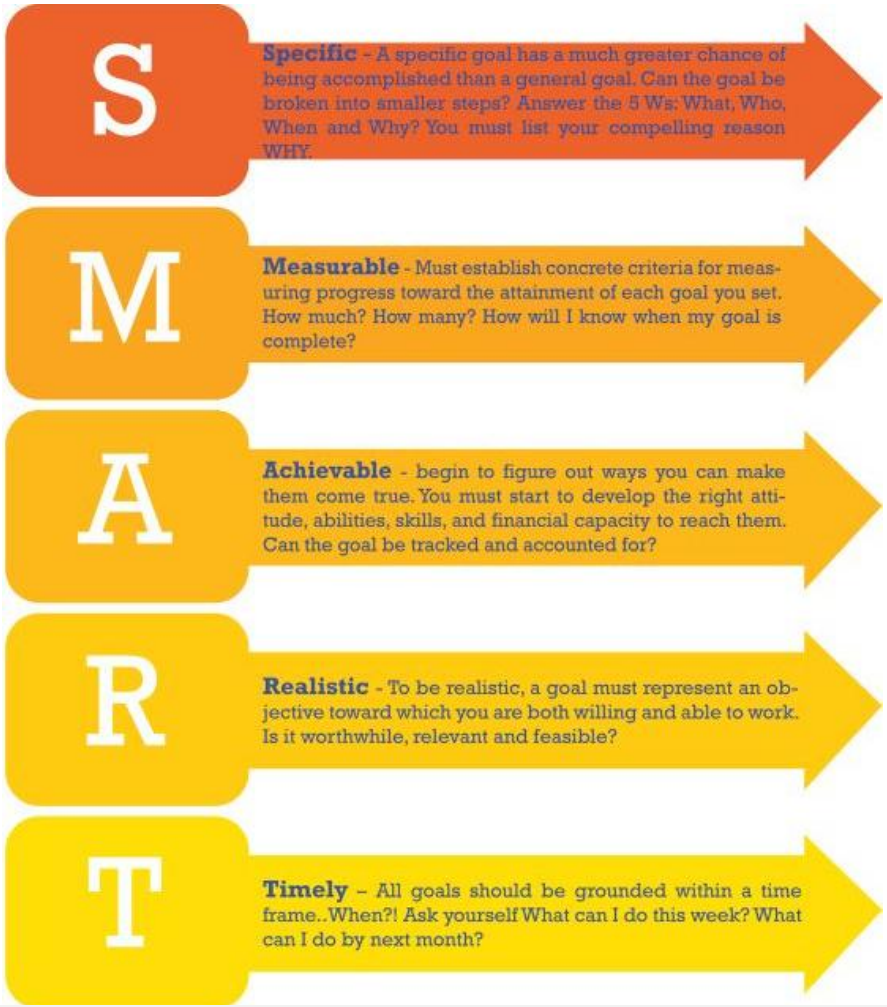
How to start...?

BE ...



How to start...?

And how to continue?

As a next step, real world interventions focussing on adherence are highly needed before physical therapy can be really considered as a “bridging intervention”...

Thank you!

"My doctor told me to increase my exercise program,
so I switched from not exercising three times
a week to not exercising six times a week."